



HIWeather

HIWeather Citizen Science Project

2020 Report and 2021 Work Plan

Background

Citizen science is a broad term that encompasses various types of projects where the public (citizens) work with agencies and academic researchers to undertake scientific research. Citizen science has its beginnings in the physical sciences but has expanded to other areas, including natural hazard research. The motivations, design, and outputs of citizen science projects vary widely. Some projects are highly participatory, where the citizens are involved in the project design, data collection, and analysis. In others, citizens only provide data to projects designed and coordinated solely by the science agencies. Both ends of this spectrum are useful for creating new scientific outputs and enhancing citizen involvement in science.

High Impact Weather Project (HIWeather), a 10-year research project, was established in 2016 by WMO (World Meteorology Organization) WWRP (World Weather Research Program). HIWeather aims to achieve dramatic improvements in the effectiveness of weather-related hazard warnings, following recent advancements in numerical weather prediction at km-scale and in disaster risk reduction. This report describes the HIWeather Citizen Science Project 2020 activities and plans for 2021. With many new and ongoing citizen projects planned or underway within the High Impact Weather community, this project is designed to share information and provide tools to help groups and agencies develop new activities.

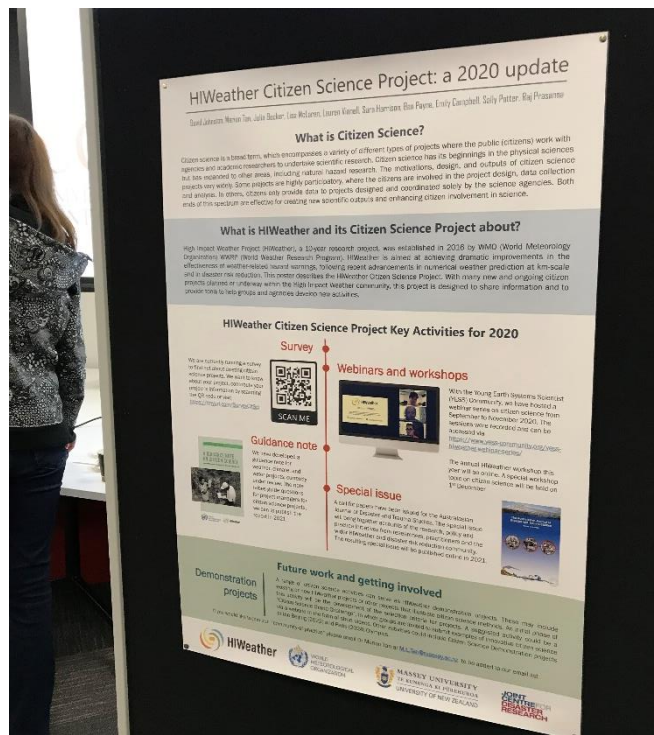


Figure 1. HIWeather Citizen Science Project presented at the Meteorological Society of New Zealand Annual Conference held in Christchurch, 25-27 November 2020

Highlights of 2020

Despite the pandemic's unprecedented challenges, the HIWeather Citizen Science project started developing tools and providing platforms to help individuals and groups share knowledge and build interest and capacities for citizen science. In 2020, the working group started working on the guidance note, producing a journal special issue, and scoping existing citizen science projects. The group also delivered a series of online webinars and workshops on citizen science with a broad range of speakers and attended by participants across continents.



Figure 2. Conducting an online webinar on citizen science

Guidance Note

The working group started developing “**A guidance note for including citizen science in weather, climate, and water projects**”. The note outlines the definition of citizen science, provides a typology of Citizen Science projects, illustrates examples of different types of citizen science projects. The note also raises guide questions for project managers of citizen sciences projects. The draft has gone through a round of revisions with the working group and currently being revised. The note is targeted to be published by Q4 2021.

Journal Special Issue on HIWeather Citizen Science

A call for papers has gone out for a special issue on citizen science of the Australasian Journal of Disaster and Trauma Studies. The special issue will bring together accounts of the research, policy and practice initiatives from researchers, practitioners and the wider HIWeather and other disaster risk reduction community. Papers have been submitted and currently undergoing review. The resulting special issue will be published online, with open access at no cost to authors or readers. The publication is targeted at the end of 2021.

A survey of citizen projects

In preparation for demonstration projects, the working group first wanted to scope the existing projects. A survey was designed and launched to help capture past and current citizen science project. The survey remains open and accessible through

https://massey.au1.qualtrics.com/jfe/form/SV_aaWCTHai8RFzBqJ

Workshops on Citizen Science

HIWeather Citizen Science Working Group provided a range of online workshops and webinars during 2020.

Webinar series with YESS Community

In partnership with the Young Earth Systems Scientist (YESS) Community, the working group delivered a webinar series on the topic 'Exploring the role of citizen science in weather, climate, and related projects. Five webinar sessions were held between September to November 2020. Table 1 below summarises the webinar series. The sessions were recorded, and the video links are made available to view as resources for citizen science.

Table 1. Summary of webinar sessions delivered with the YESS Community from September to November 2020

Date	Session Title	Speaker	Session summary
17 Sep	Citizen Science 101: What is citizen science?	Lisa McLaren <i>Massey University</i>	The first session introduced the series and talked about the definition of citizen science, benefits, and some high-level considerations of running citizen science projects.
1 Oct	Cloudy with a chance of pain: A Citizen Science project to understand how weather affects pain	David Schultz <i>University of Manchester</i>	The speaker presented a successful citizen science initiative. The project using rich data contributed by the public investigated the relationship between weather and people's experience with pain.
15 Oct	Crowdsourced hazard maps: Contributions of internet-savvy citizens in documenting the geospatial effects of weather-related disaster events	Richard Ybañez <i>University of the Philippines</i>	The third session looked at citizen science from a crowdsourcing perspective. The speaker discussed how internet-savvy citizens contributed georeferenced data rapidly after weather-related disasters in the Philippines.
12 Nov	Landslide Prediction System by CCS for landslide events over western parts of India	J R Kulkarni <i>Center for Citizen Science, Pune, India</i>	The speaker discussed a project based in India. The session covered how the Center for Citizen Science in Pune India developed a system for predicting landslides associated with heavy rainfall.
26 Nov	Build, measure, understand – Citizen science for weather education	Henning Rust <i>Freie Universität Berlin</i>	The final session covered a citizen science project that engages with school pupils; discussing how engaging with students has helped them understand and use weather forecast and warnings.

Citizen Science Event at the 2020 HIWeather Workshop

The working group co-organised the HIWeather Workshop held online from 1-3 December 2020. The HIWeather Workshop was open to anyone interested in improving weather-related warnings. The three days involved different core topics of HIWeather: (1) Successful citizen science, (2) Warnings value chain, and (3) Towards the perfect warning. The working group ran a one-day event that included citizen science projects and research presentations and interactive workshops to scope HIWeather citizen science's future. The format of the online workshop spanned through time zones and attracted presentation speakers across continents. Table 2 summarises the sessions for Day-1 of the 2020 HIWeather Workshop

Table 2. Summary of the session for the HIWeather Workshop Day-1 Event on 'Successful Citizen Science.'

Session	Topics	Speakers/Facilitators
Presentation session 1	WeatheX - Australia's Community Severe Weather Reporting App	Joshua Soderholm <i>Bureau of Meteorology, Australia</i>
	Crowdsourcing Winter Storm Sentiment via Natural Language Processing	Renee Sieber <i>McGill University</i>
Presentation session 2	Experiences from crowdsourcing campaign via DWD weather app	Harald Kempf <i>Deutscher Wetterdienst</i>
	MétéoAlerte, a significant weather warning system using citizen observations since 2001	Christian Pagé <i>MétéoAlerte</i>
Presentation session 3	Social sensing of high impact weather and its potential for use in impact verification	Michelle Spruce <i>University of Exeter</i>
	Interdisciplinary and cross-sectoral knowledge construction of floods events between the scientific sector and the local community, at the Matanza River in eastern Argentina	Frederico Robledo <i>Centro de Investigaciones del Mar y la Atmósfera</i>
	Impact of Users' Feedback on Weather Forecast Evaluation in Ghana, West Africa	Maureen Ahiataku <i>Ghana Meteorological Agency</i>
Presentation session 4	Cloudy with a Chance of Pain	David Schultz <i>University of Manchester</i>
	Connecting the past and present to understand hazardous weather events via citizen science	Victoria Slonosky, Renee Sieber <i>McGill University</i>
Interactive workshop sessions	Future for HIWeather Citizen Science	David Johnston, Marion Tan <i>Massey University</i>

Figure 3. Draft matrix on the typology of projects based on citizens' role and scientists' level of control based on the project

Proposed Activities 2021

1. Demonstration projects
2. Publication of guidance note
3. Publication of special issue
4. Webinars and workshops
5. Project management

1. Demonstration projects

The survey from 2020 has provided insights of many citizen science projects currently happening in the HIWeather space. Not all citizen science projects have formal websites or have been officially published. Some projects may not necessarily have the chance to share their research outputs and their innovative methods. This activity aims to provide a platform for citizen science projects to be showcased through HIWeather supported web platforms. Starting mid-year, HIWeather web platforms will showcase citizen science projects regularly. Projects will be scoped out by the team highlighting innovative citizen science initiatives. An open call for groups to submit content, as part of a grand challenge, may also be administered. The demonstration projects will be part of an inventory collection featured in the HIWeather website.

From the HIWeather 2020 Workshop, several participants have expressed their interest to hear from the citizens of citizen science. Part of this demonstration projects activity will look at ways to also highlight citizen's contributions and stories. An aspect that can be included will be features on citizens and their experiences in participating in projects through compilation of stories that can be published online as written or video features.

Expected outcome and timeline: Provide a platform to display a range of citizen science activities that can serve as HIWeather Citizen Science Demonstration projects. Regular feature of demonstration projects and citizen sciences stories on HIWeather platforms.

Specific outputs:

- Q1. Develop guidelines and criteria for selection of demonstration projects. Strategise the scoping and recruitment for projects to be demonstrated; including the grand challenge. Scope and select the platforms to submit and publish content.
- Q2. Start an inventory of projects as a line-up of demonstration projects to be featured in web platforms. Contact, coordinate, and collaborate with different citizen science projects and their citizens for content and stories to publish. Open a platform for submission for the grand challenge and distribute the call for submissions.
- Q3. Start featuring demonstration projects and citizens' stories online. Issue fortnightly update on web platforms on demonstration projects or citizens' stories. Set deadline for grand challenge submissions.
- Q4. Select and feature grand challenge demonstration projects.

2. Publication of guidance note

This activity will oversee through the publication of the guidance note. This activity will support the ongoing work in revisions, editing, formatting, and publication of the guidance note.

Expected outcome and timeline: Publication of the guidance note by Q4 2021

3. Publication of journal special issue

This activity will oversee through the publication of the journal special issue. This activity will support the ongoing work in revisions, editing, formatting, and publication of the journal special issue.

Expected outcome and timeline: Publication of the journal special issue by Q4 2021

4. Webinars

HIWeather Citizen Science Working Group will maintain the partnership with YESS-Community to deliver webinars or workshops. The group will continue to explore a range of workshops/ conferences/ training opportunities on citizen science, aimed at sharing practice, creating new networks for knowledge sharing and collaboration.

Expected outcome and timeline: Throughout 2020, a range of workshops/conferences/training on citizen science, aimed at sharing practice, creating new networks for knowledge sharing and collaboration.

Specific outputs: Webinar series with YESS community

5. Project management

To support the development and implementation of this project

Expected outcome and timeline: Effective project management of the HIWeather Citizen Science Project. Ongoing.

Timeline for 2021

Activity	Outcomes/outputs	Timeline	Lead
1.1 Demonstration projects	Features of demonstration projects and citizen stories on HIWeather web platforms	Q1. Strategy and development of criteria for selection of demonstration projects and the grand challenge. Q2. Data gathering for inventory of projects to line-up of projects to be featured in web platforms. Open the call for grand challenge Q3. Start featuring demonstration projects and citizens' stories online. Deadline for grand challenge Q4. Feature grand challenge selections.	David Johnston, Marion Tan
2 Guidance note	WMO HIWeather Guidance note: "A guidance note for including citizen science in weather, climate and water projects."	Q4. Publication of guidance note	Marion Tan
3 Journal special issue	A special issue on citizen science of the Australasian Journal of Disaster and Trauma Studies	Q4. Publication of journal special issue	Lauren Vinnell
4 Webinars	Webinar series with YESS Community	Q3 to Q4 Webinar series	David Johnston, Marion Tan
5 Project Management	Ongoing support to deliver tasks for the project	Ongoing	David Johnston, Marion Tan

Related Links

Concept note of the webinar series with YESS Community on 'Exploring the role of citizen science in weather, climate, and related projects. https://www.yess-community.org/yesscomm_wp/wp-content/uploads/2020/11/YESSHIW-webinar-series.pdf

Compilation of the video recordings of the five sessions of the webinar series with YESS Community on 'Exploring the role of citizen science in weather, climate, and related projects. <https://www.yess-community.org/yess-hiweather-webinar-series/>

Compilation of the video recording of the 'Successful Citizen Science' presentations during the 2020 HIWeather Workshop. <https://drive.google.com/drive/folders/1EoumyYGRCHFxW5cSp483krWR7xmw0dk5?usp=sharing>